

No. 9(1)/2021-INST

Dated 05th March, 2021

Ph.D. PROGRAM - AUGUST 2021 SESSION

Institute of Nano Science and Technology (INST), Mohali invites applications from prospective candidates for admission into its Ph. D. Program in several areas of nanoscience and nanotechnology for the session beginning in August 2021. Selected students will be provided fellowship as per the norms of INST and Government of India. **Students with an independent source of fellowship, such as CSIR/UGC-JRF, are encouraged to apply.** Selected students will be enrolled in the Ph. D. program of Academy of Scientific and Innovative Research (AcSIR). Upon successful completion of their PhD, the degree will be awarded by AcSIR.

The major ongoing research areas at INST are given at the end of this document.

a) ELIGIBILITY

Candidates must have

- M. Sc. or M. Pharm. or M. Tech. in Basic or Applied Sciences, Engineering or related areas. Students who have appeared for the final year/semester examinations are also eligible, provided that the degree will be granted by the time of interview/Ph. D. registration.
- Qualified at least one national examination out of GATE, CSIR/UGC-NET, JEST, JGEEBILS (TIFR/ NCBS), ICMR-JRF, DBT-JRF, DST-INSPIRE or GPAT.

b) APPLICATION & SELECTION PROCEDURE

- Candidates must submit applications online at <http://acsir.emli.in/ACSIRAdmissionPortal/#/>
- Eligible candidates will be shortlisted for interview and the date and mode of interview will be communicated to the email address provided by candidate.
- List of shortlisted candidates will also be uploaded to INST and AcSIR website.
- Ph. D. interview will be conducted online through google meet. The link to access google meet will be provided prior to the interview.
- In case the interviews are conducted in person, the candidates called for interview will be paid sleeper class rail fare or non-AC bus fare from the place of residence to INST and back on production of ticket.
- The list of candidates selected for Ph. D. will be uploaded to INST and AcSIR website and the candidates will be intimated by email.
- The candidate are advised to visit INST website (www.inst.ac.in) frequently to track the latest developments.

c) LAST DATE

- The last date of submission of Ph. D. applications will be **31st May, 2021**.
- Applications received after the last date shall not be entertained in any case.

Research Units at INST

Chemical Biology	Energy & Environment	Quantum Materials & Devices
<p><i>Cancer Nanomedicine</i></p> <ul style="list-style-type: none">▪ Epigenetic based▪ Hyperthermia based▪ Photo-thermal therapy▪ Photo-therapy▪ Combinatorial nanomedicine approach	<p><i>Inorganic & Materials Chemistry</i></p> <ul style="list-style-type: none">▪ Electrochemistry▪ Photocatalysis▪ Solid state chemistry▪ Energy storage & conversion▪ Solar cells▪ Framework materials	<p><i>Experimental aspects of Material and Device Physics</i></p> <ul style="list-style-type: none">▪ Low dimensional materials and artificial superstructures▪ Nanoscale piezo, ferro and pyro-electricity▪ Photovoltaics▪ Micro and nano structured device▪ Nano devices and sensors▪ Spintronics▪ Organic-inorganic hybrid nanostructured devices, self-powered electronics, sensors and actuators▪ Flow fabrication of nanostructures for light driven properties▪ Microfluidics for sensing and delivery▪ Physics in nanodimension objects
<p><i>Nano-therapeutics</i></p> <ul style="list-style-type: none">▪ Infectious diseases: tuberculosis, leishmaniosis▪ Neurodegenerative diseases: Alzheimer's disease, Parkinsonism▪ Lifestyle diseases: rheumatoid arthritis, osteoarthritis▪ Autoimmune disease: ulcerative colitis	<p><i>Organic & Polymer Chemistry</i></p> <ul style="list-style-type: none">▪ Small molecule & polymer synthesis▪ Catalysis▪ Supramolecular materials▪ Luminescent materials▪ Chemosensors▪ Biomaterials	<p><i>Computational Nanoscience</i></p> <ul style="list-style-type: none">▪ Theoretical condensed matter physics▪ Exploiting piezoelectricity, electronic charge, spin and valley degrees of freedom at the nanoscale for next-generation electronics▪ Nanomaterials and their interfaces for power conversion: e.g., photovoltaics, photocatalysis, sensors▪ Designing of spin-interfaces and spintronics materials▪ Single molecule magnets and molecular magnetism
<p><i>Bio-mimetic and Tissue Engineering</i></p> <ul style="list-style-type: none">▪ Regenerative nanomedicine▪ Stem cell nanomedicine▪ Supramolecular nanomaterial scaffolds▪ Smart hydrogels▪ Hybrid organic-inorganic nanomaterials	<p><i>Spectroscopy & Physical Chemistry</i></p> <ul style="list-style-type: none">▪ Ultrafast spectroscopy▪ Single molecule spectroscopy▪ Nanophotonics▪ Biosensing▪ Luminescence spectroscopy	
<p><i>Biomolecular Phenomenon at Nanoscale</i></p> <ul style="list-style-type: none">▪ Disease mechanism▪ Self-assembling bio-nanomaterials▪ Nano-confinements▪ Biological nano-machines	<p><i>Environmental Chemistry</i></p> <ul style="list-style-type: none">▪ Water & air purification▪ Sensing▪ CO₂ sequestration▪ Waste management	
<p><i>Nano-diagnostic</i></p> <ul style="list-style-type: none">▪ Biosensors: SERS, electrochemical or fluorescence based techniques▪ Theranostics: biomaterials for theranostics	<p><i>Computational Chemistry</i></p> <ul style="list-style-type: none">▪ Electron transfer in proteins & enzymatic chemical reactions▪ Electron transport at molecular nano-junctions	
<p><i>Agri-nanotechnology</i></p> <ul style="list-style-type: none">▪ Nano-fertilizers▪ Nano-pesticides		
<p><i>Nano-toxicology</i></p> <ul style="list-style-type: none">▪ Cell and tissue toxicity▪ Nanomaterial toxicity▪ Developmental, neurological, behavioural nano-toxicity		

Further details are available at www.inst.ac.in